Reading Assignment for December 2
Sections 14.1 through 14.5

Please notice that this file is two pages long.

14.1 - Equilibrium and Oscillation

- This section reintroduces and generalizes the idea of frequency and period.
- Period, T - Time for one cycle.
- Frequency, f - Number of cycles per time.
- $f = 1/T$, just like in circular motion.

14.2 - Linear Restoring Forces and Simple Harmonic Motion

- Simple Harmonic Motion (SHM) - Oscillation of a mass connected to a spring with no friction or a pendulum.
- Amplitude, A - maximum distance from equilibrium.
- Note: In lecture, I will go all the way through the mass on a spring and then come back and do the pendulum.

14.3 - Describing Simple Harmonic Motion

- Being able to determine the period and frequency from a position-versus-time graph is very important.
- Velocity-versus-time and acceleration-versus-time graphs are good to know but not essential.
- I won't require you to use most of the equations from this section (v_{max} and a_{max} particularly), but they may come in helpful in other classes.

14.4 - Energy is Simple Harmonic Motion

- For my class, the most important part of this section is the equation for the period.
- $T = 2\pi\sqrt{\frac{m}{k}} \Rightarrow$ the mass and spring completely determine the period of simple harmonic motion. The starting conditions, especially amplitude, have no effect on period.

14.5 - Pendulum Motion

- In lecture, I'll probably derive the pendulum equations using torque instead of force. I find it's a little bit clearer.
- $T = 2\pi\sqrt{\frac{L}{g}} \Rightarrow$ the length of the pendulum and gravity completely determine the period. Again, amplitude has no effect.
- Read about the physical pendulum carefully as I may run out of time and only cover the simple pendulum in class.